

CLAIMS:

- 5 1. A method for recirculating a part of exhaust gases from an exhaust pipe (6, 9) of a diesel engine (1) to an inlet of the engine, the exhaust gases being diverted from the exhaust pipe (6, 9) and directed through a recirculation conduit (10) to a controllable valve device (12) arranged between the engine and an air intake (2) thereof to enable supply of air/recirculated exhaust gases in a desired relation to a combustion chamber of the engine, the valve device comprising dampers (20, 21) arranged in inlet channels (17, 18) for the recirculated exhaust gases and air respectively, characterized in that at least one of the dampers (20, 21) always is maintained open and that the other damper (20, 21) is closed by means of a drive motor (22) common to the dampers.
- 10 2. A method according to claim 1, characterized in that the exhaust gases from the exhaust pipe (6, 9) are diverted after a catalyst (7) and a particle filter (8).
- 15 3. A method according to claim 1 or 2, characterized in that the relation air/recirculated exhaust gases is regulated by means of a control device (13) controlling the valve device (12) based on information (14, 15, 16) supplied as to the actual operational state of the engine (1).
- 20 4. A method according to any preceding claim, characterized in that the exhaust gases in the recirculation conduit (10) are cooled in a cooler (11) arranged in the recirculation conduit (10).
- 25 5. A method according to any preceding claim, characterized in that in a super charged diesel engine the recirculated exhaust gases are supplied between the air intake (2) and a super charger (4).
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6. A device for recirculating a part of the exhaust gases from an exhaust pipe (6, 9) of a diesel engine (1) to an inlet of the engine, a recirculation conduit (10) being provided for diverting the exhaust gases from the exhaust pipe (6, 9) and directing them to a controllable valve device (12) arranged between the engine and an air intake (2) thereof for enabling supply of air/recirculated exhaust gases in a desired relation to a combustion chamber of the engine (1), the valve device comprising dampers (20, 21) arranged in inlet channels (17, 18) for the recirculated exhaust gases and air respectively, characterized in that the valve device is arranged to always maintain at least one of the dampers open and that a drive motor (22) common to the dampers is arranged to close the other of the dampers (20, 21).

7. A device according to claim 6, characterized in that the drive motor (22) of the valve device (12) is controlled by a control device (13) regulating, by means of the positions of the dampers (20, 21), the relation air/recirculated exhaust gases in the valve device (12) based on information (14, 15, 16) supplied as to the actual operational state of the engine.

8. A device according to any of claims 6-7, characterized in that the recirculation conduit (10) is connected to the exhaust pipe (6, 9) of the engine after the catalyst (7) and a particle filter (8).

9. A device according to any of claims 6-8, characterized by a cooler (11) arranged in the recirculation conduit (10) to cool the recirculated exhaust gases.

10. A device according to any of claims 6-9, characterized in that in a diesel engine having a super charger, the valve (12) is arranged between the air intake (2) and the super charger.

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11. A device according to any of claims 6-10, characterized in that the drive motor is a step-motor (22) arranged to operate one of the dampers (20, 21) at a time and adjust the same into an arbitrary position.

12. A device according to any of claims 6-11, characterized in that both dampers (20, 21) in a normal position are spring loaded (28, 29) to an open position.

13. A device according to any of claims 6-12, characterized in that the valve device (12) comprises a first axle (23) on which a first one (20) of the dampers is arranged and a second axle (24) on which a second one (21) of the dampers is arranged, the first and second axles (23, 24) being concentric, and that both axles (23, 24) are arranged to be rotatable by the drive motor (22).

14. A device according to claim 13, characterized in that the first axle (23) is connected to a first actuation arm (26), that the second axle (24) is connected to a second actuation arm (27), and that the valve device (12) comprises an actuation pin (25) which is moveable by means of the drive motor (22) in order to rotate the first axle (23) and the second axle (24) by interaction with the first actuation arm (26) and the second actuation arm (27), respectively, so as to control the position of the dampers (20, 21).

15. A device according to claim 14, characterized in that the valve device (12) comprises springs (28, 29) acting on the actuation arms (26, 27) so as to spring load each damper (20, 21) towards an open position.

16. A valve for mixing two fluids flowing through two inlet channels (17, 18), characterized in that dampers (20, 21) are arranged in both inlet channels (17, 18), that at least one of

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the dampers always is open and that a common motor (22) is arranged to close the other of said dampers (20, 21).

5 17. A valve according to claim 16, characterized in that the motor is a step-motor (22) arranged to operate one of the dampers (20, 21) at a time and adjust the same into an arbitrary position.

10 18. A valve according to claim 16 or 17, characterized in that both dampers (20, 21) in a normal position are spring loaded (28, 29) to an open position.

15 19. A valve according to any of claims 16-18, characterized in that the valve (12) comprises a first axle (23) on which a first one (20) of the dampers is arranged and a second axle (24) on which a second one (21) of the dampers is arranged, the first and second axles (23, 24) being concentric, and that both axles (23, 24) are arranged to be rotatable by the motor (22).

20 20. A valve according to claim 19, characterized in that the first axle (23) is connected to a first actuation arm (26), that the second axle (24) is connected to a second actuation arm (27), and that the valve (12) comprises an actuation pin (25) which is moveable by means of the motor (22) in order to rotate the first axle (23) and the second axle (24) by interaction with the first actuation arm (26) and the second actuation arm (27), respectively, so as to control the position of the dampers (20, 21).

30 21. A valve according to claim 20, characterized in that the valve (12) comprises springs (28, 29) acting on the actuation arms (26, 27) so as to spring load each damper (20, 21) towards an open position.

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5 22. A method for regulating a diesel engine, a part of the exhaust gases from the diesel engine being recirculated to the inlet thereof and a supply of fresh air and recirculated exhaust gases to the diesel engine being regulated by means of a valve device (12) controlled by a control device (13) to regulate the relation between the supplied fresh air and recirculated exhaust gases, characterized in that the control device (13) is supplied with information from a Lambda probe (14), an engine speed sensor (15) and an engine load sensor (16) so as to regulate the air/fuel relation of the diesel engine by means of said information and the valve device.

15 23. A regulating method according to claim 22, characterized in that a valve according to any of claims 16-21 is used as the valve device.

20 24. A regulating device for a diesel engine, comprising means (10) for recirculating a part of exhaust gases from the diesel engine to an inlet thereof and a valve device (12) controlled by a control device (13) for regulating supply of fresh air and recirculated exhaust gases to the diesel engine so as to regulate the relation between supplied fresh air and recirculated exhaust gases, characterized in that a Lambda probe (14), an engine speed sensor (15) and an engine load sensor (25) (16) are connected to the control device (13) to supply information thereto and that the control device (13) is arranged to regulate the air/fuel relation of the diesel engine by means of said information and the valve device (12).

30 25. A device according to claim 24, characterized in that the valve device is a valve according to any of claims 16-21.

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